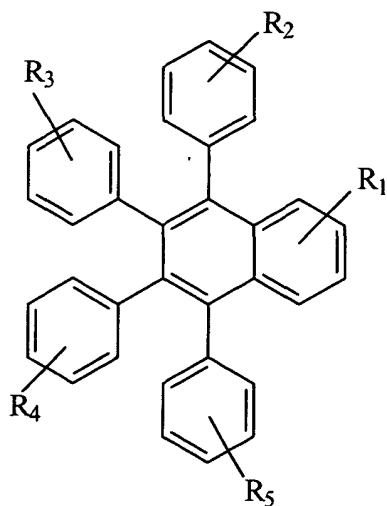


WHAT IS CLAIMED IS:

1. A device, comprising:
an anode;
a cathode;
a first organic layer disposed between the anode and the cathode, wherein the first organic layer comprises a material that produces phosphorescent emission when a voltage is applied between the anode and the cathode; and
a second organic layer disposed between the first organic layer and the cathode, wherein the second organic layer is in direct contact with the first organic layer, and wherein the second organic layer comprises an aromatic hydrocarbon material.
2. The device of claim 1, wherein the aromatic hydrocarbon material has a dipole moment of less than about 2.0 debyes.
3. The device of claim 2, wherein the aromatic hydrocarbon has a dipole moment of zero.
4. The device of claim 1, wherein the aromatic hydrocarbon comprises a material having the structure:

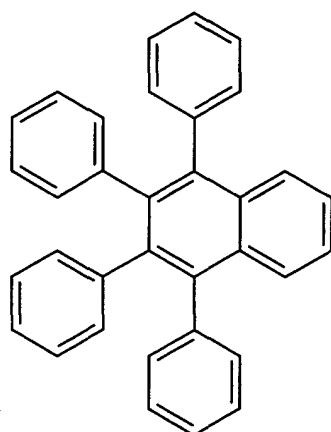


III

wherein:

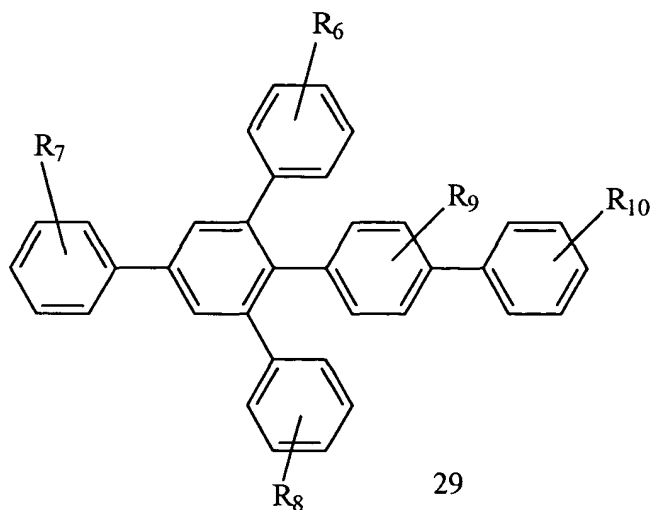
R₁-R₅ each represent no substitution, mono-, di-, or tri- substitution, and wherein the substituents are the same or different, and each is selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, heteroalkyl and substituted aryl.

5. The device of claim 4, wherein the aromatic hydrocarbon comprises a material having the structure:



I

6. The device of claim 1, wherein the aromatic hydrocarbon comprises a material having the structure:

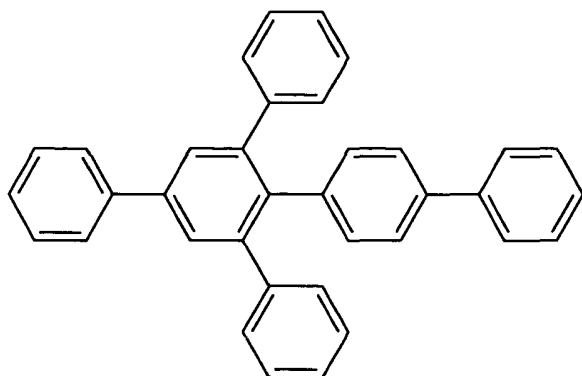


IV

wherein:

R_6 - R_{10} each represent no substitution, mono-, di-, or tri- substitution, and wherein the substituents are the same or different, and each is selected from the group consisting of alkyl, aryl, heteroalkyl, substituted aryl, substituted heteroaryl and heterocyclic groups.

7. The device of claim 6, wherein the aromatic hydrocarbon comprises a material having the structure:



II

8. The device of claim 1, wherein the second organic layer is in direct contact with the cathode.

9. The device of claim 1, further comprising a third organic layer disposed between the second organic layer and the cathode.

10. The device of claim 1, wherein the aromatic hydrocarbon material has a highest unoccupied molecular orbital that is not more than 0.81 eV less than the highest occupied molecular orbital of the hole transporting material in the first organic layer.

11. The device of claim 10, wherein the aromatic hydrocarbon material has a dipole moment

less than about 2.0 debyes.

12. A device, comprising:

an anode;

a cathode;

an first organic layer disposed between the anode and the cathode, wherein the first organic layer comprises a material that produces phosphorescent emission when a voltage is applied between the anode and the cathode;

a second organic layer disposed between the first organic layer and the cathode, wherein the second organic layer is in direct contact with the first organic layer, and wherein the second organic layer comprises an aromatic hydrocarbon material having a highest unoccupied molecular orbital that is at least 0.81 eV less than the highest occupied molecular orbital of the hole transporting material in the first organic layer.

13. The device of claim 12, wherein the aromatic hydrocarbon material has a dipole moment less than about 2.0 debyes.

14. A device, comprising:

an anode;

a cathode;

an first organic layer disposed between the anode and the cathode, wherein the first organic layer is comprises a material that produces phosphorescent emission when a voltage is applied between the anode and the cathode;

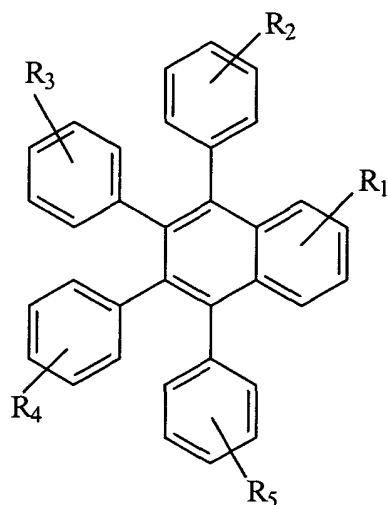
a second organic layer disposed between the first organic layer and the cathode, wherein the second organic layer is in direct contact with the first organic layer, and wherein the second organic layer comprises an aromatic hydrocarbon material, and wherein the device has an unmodified external quantum efficiency of at least about 3% and a lifetime of at least about 1000 hours at an initial luminance of about 100 to about 1000 cd / m².

15. The device of claim 14, wherein the device has an unmodified external quantum efficiency of at least about 5% and a lifetime of at least about 1000 hours at an initial luminance of about 100 to about 1000 cd / m².

16. The device of claim 14, wherein the aromatic hydrocarbon material has a dipole moment less than about 2.0 debyes.

17. The device of claim 14, wherein the aromatic hydrocarbon material has a zero dipole moment.

18. The device of claim 14, wherein the aromatic hydrocarbon material has the structure:

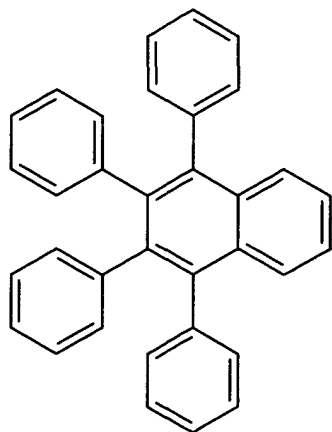


III

wherein:

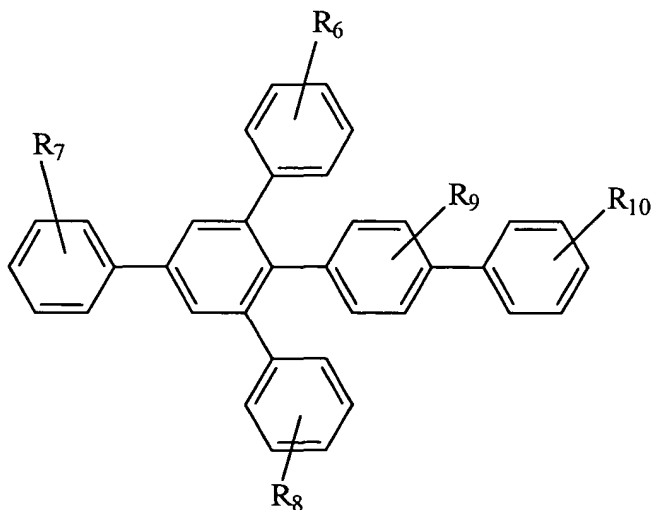
R₁-R₅ each represent no substitution, mono-, di-, or tri- substitution, and wherein the substituents are the same or different, and each is selected from the group consisting of alkyl, aryl, heteroalkyl, substituted aryl, substituted heteroaryl and heterocyclic groups.

19. The device of claim 18, wherein the aromatic hydrocarbon material has the structure:



I

20. The device of claim 14, wherein after 100 hours of operation at an initial luminance of 600 cd/m^2 at least about 90% of initial luminance is retained.
21. The device of claim 14, wherein after 1000 hours of operation at an initial luminance of 1000 cd/m^2 at least about 70% of initial luminance is retained.
22. The device of claim 14, wherein the aromatic hydrocarbon material has the structure:

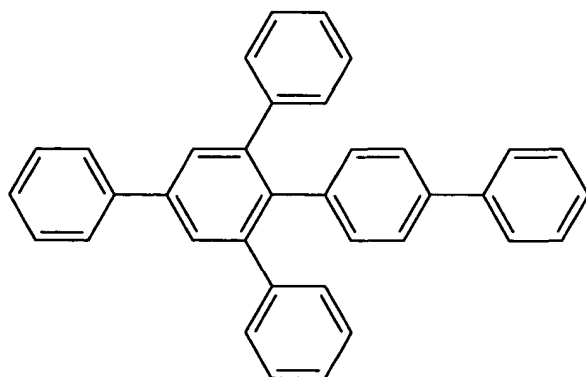


IV

wherein:

R₆-R₁₀ each represent no substitution, mono-, di-, or tri- substitution, and wherein the substituents are the same or different, and each is selected from the group consisting of alkyl, aryl, heteroalkyl, substituted aryl, substituted heteroaryl and heterocyclic groups.

23. The device of claim 22, wherein the aromatic hydrocarbon material has the structure:



II